

WHAT IS CLAIMED IS:

1. An apparatus for detecting a heart sound of a living subject, comprising:

a memory device which stores heart-sound characteristic information which is characteristic of a heart sound of the subject;

a heart-sound sensor which is adapted to be worn on a body portion of the subject that is distant from a chest of the subject and which detects, from the body portion, a physical signal containing a heart-sound component and supplies the physical signal; and

a heart-sound determining means for determining, based on the heart-sound characteristic information stored in the memory device, the heart-sound component contained in the physical signal.

2. An apparatus according to claim 1, wherein the heart-sound characteristic information comprises a heart-sound frequency range consisting of a plurality of frequencies which are predetermined by subjecting, to a frequency analysis, the heart sound detected in advance from the chest of the subject, and wherein the heart-sound determining means extracts, from the physical signal, the heart-sound component having the plurality of frequencies of the heart-sound frequency range.

3. An apparatus according to claim 1, wherein



the heart-sound characteristic information comprises a first portion of the heart sound detected in advance from the chest of the subject, said first portion being detected during a predetermined time interval, and wherein the heart-sound determining means determines, as the heart-sound component, a second portion of the physical signal supplied by the heart-sound sensor, said second portion having a length corresponding to the predetermined time interval and having a waveform best approximating a waveform of said first portion of the heart sound.

4. An apparatus according to claim 1, wherein the heart-sound characteristic information comprises a first portion of the heart sound detected in advance from the chest of the subject, said first portion having a plurality of frequencies of a heart-sound frequency range which is predetermined based on a frequency-time analyzed signal of the heart sound, and being detected during a predetermined time interval, and wherein the heart-sound determining means determines, as the heart-sound component, a second portion of the physical signal supplied by the heart-sound sensor, said second portion having the plurality of frequencies of the heart-sound frequency range, having a length corresponding to the predetermined time interval, and having a waveform best approximating a waveform of said first portion of the heart sound.

5. An apparatus according to claim 2, further



comprising:

a heart-sound microphone which is adapted to be worn on the chest of the subject and detects, in advance, the heart sound of the subject; and

a heart-sound-frequency-range determining means for determining the heart-sound frequency range by subjecting, to the frequency analysis, the heart sound detected in advance by the heart-sound microphone from the chest of the subject.

6. An apparatus according to claim 3, further comprising:

a heart-sound microphone which is adapted to be worn on the chest of the subject and detects, in advance, the heart sound of the subject; and

a determining means for determining, from the heart sound detected in advance by the heart-sound microphone from the chest of the subject, said first portion which is detected during the time interval between a first predetermined periodic point of the heart sound and a second predetermined periodic point thereof.

7. An apparatus according to claim 1, further comprising:

a heart-sound microphone which is adapted to be worn on the chest of the subject and detects, in advance, the heart sound of the subject; and

a heart-sound-characteristic-information obtaining



means for obtaining the heart-sound-characteristic-information from the heart sound detected in advance by the heart-sound microphone from the chest of the subject.

8. An apparatus according to claim 7, wherein the heart-sound-characteristic-information obtaining means comprises a frequency-time analyzing means for subjecting, to a frequency-time analysis, the heart sound detected in advance by the heart-sound microphone from the chest of the subject, and thereby providing a frequency-time analyzed signal.

9. An apparatus according to claim 8, wherein the heart-sound-characteristic-information obtaining means further comprises a heart-sound-frequency-range determining means for determining, from the frequency-time analyzed signal, a heart-sound frequency range consisting of a plurality of frequencies corresponding to a plurality of signal magnitudes which are greater than a reference value, the heart-sound frequency range providing the heart-sound-characteristic-information.

10. An apparatus according to claim 9, wherein the heart-sound-characteristic-information obtaining means further comprises a waveform determining means for determining, as the heart-sound-characteristic-information, a waveform of a first portion of the heart sound detected in advance from the chest of the subject, said first portion having



the plurality of frequencies of the heart-sound frequency range, and being detected during a time interval between a first predetermined periodic point of the heart sound and a second predetermined periodic point thereof.

11. An apparatus according to claim 1, wherein the heart-sound sensor comprises a pressure-pulse-wave sensor which is adapted to be worn on a limb of the subject, detects a pressure pulse wave which is produced from an artery of the limb and is propagated from the artery to the sensor, and produces a pressure-pulse-wave signal containing the heart-sound component.